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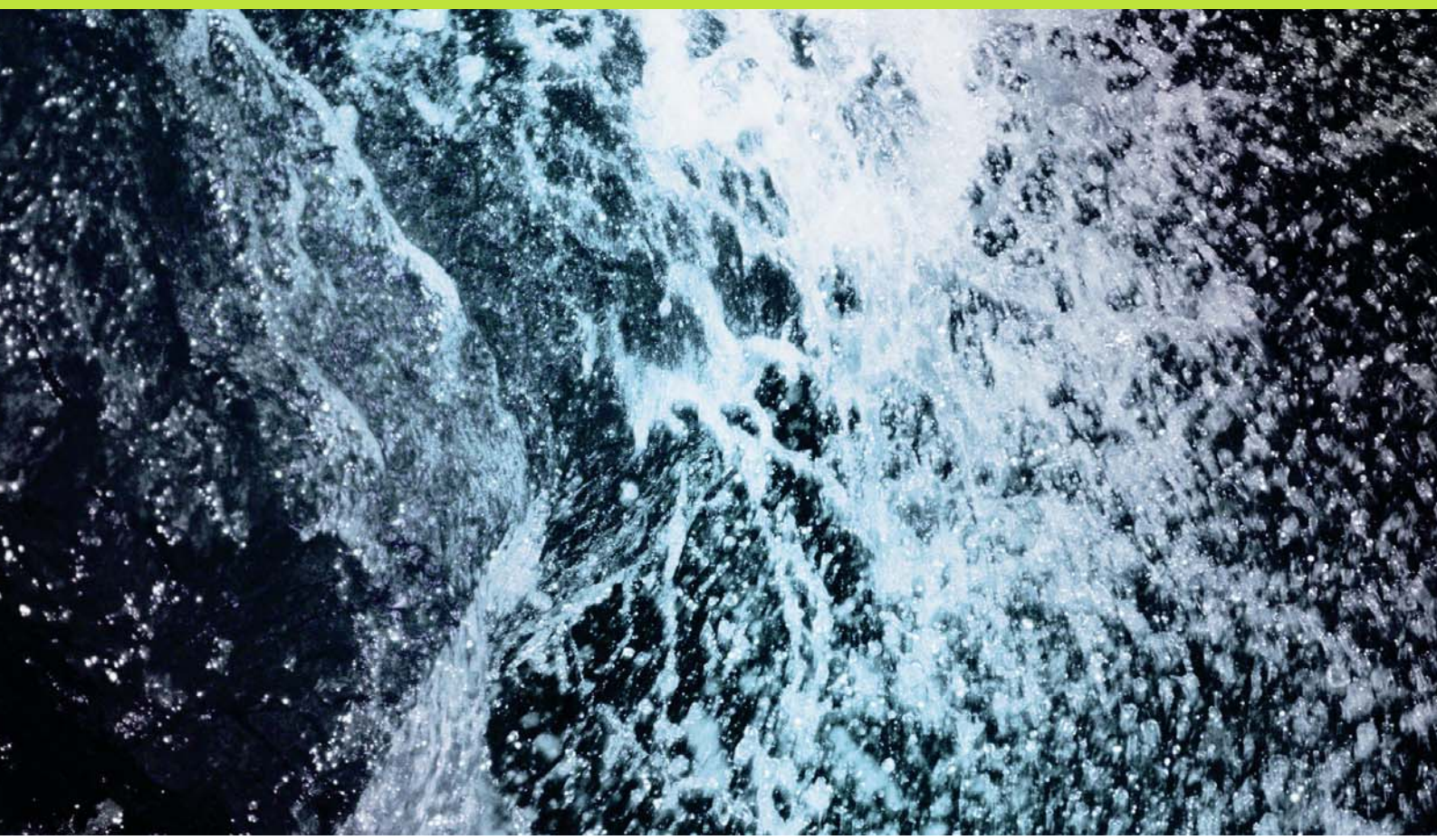

AS-2 “shuftie”

AES and embedded audio shuffler

user manual

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I System Overview

The AS-2 is an audio shuffle unit. When packaged as a complete system incorporating chassis, AS-2 processing card and control panel it is known as a “shuftie”. This system is capable of moving AES input audio channels and embedded audio channels into different AES and embedded output positions.

- Two AES inputs (AES1 and AES2) and one SDI input processing 2 stereo pairs (Embedded 1 and Embedded 2).
- Two AES outputs (AES1 and AES2) and one SDI output processing 2 stereo pairs (Embedded 1 and Embedded 2).
- The system can take any input audio {AES1(L), AES1(R), AES2(L), AES2(R), Emb1(L), Emb1(R), Emb2(L) and Emb2(R)} and shift them onto any of the output streams.
- Full individual level controls allows mixing as well as simple shifting of audio streams.
- Capable of mixing down audio such as dolby 5.1 to a single stereo pair.
- Independent output stream gains.
- Automation controllable
- 6 user memories

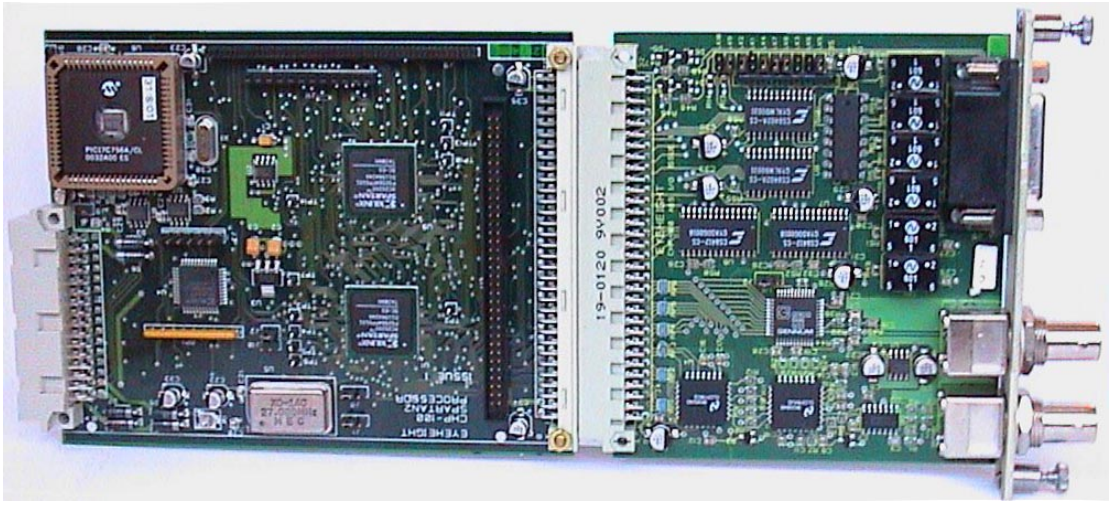

Figure 1 AS-2 "shuftie" audio shuffler PCB.

I.I Applications for the AS-2

Applications for the AS-2 include the following:

- Audio mix-down of multi channel audio to a single stereo pair.
- Multi lingual track selections.

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- L, R reversal correction.

1.2 Associated Equipment for the AS-2

The AS-2 is a module and requires both a chassis and a control surface to function.

1.2.1 Chassis Types

- **flexiBox** is a 1RU chassis. The order code is FB-9. This will hold a maximum of 6 AS-2 Modules with “Hot Swap” redundant PSU option and “Hot Swap” AS-2 modules.
- **maxiBox** is an alternative low cost 1RU chassis. The order code is MX-9. This also will hold a maximum of 6 AS-2 modules but it has no redundant PSU option and the AS-2 units must be factory fitted.

Figure 2 FlexiBox with flexiPanel fitted

1.2.2 Control Surfaces

- **flexiPanel** is a IRU control surface that fits on the Front of a 1RU flexiBox. The order code is FP-9. A FlexiPanel can also be used in conjunction with a miniBox, in this case the extra accessory (Order code RR-9) will be required
- **FP-10** is a desk mounting control surface (Order code FP-10). This unit is a modular unit which can be used in conjunction with the units below.

Figure 3 FP-10 desktop modular panel

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Figure 4 FP-9 1RU panel.

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2 Installation

2.1 Installation of the AS-2 product

If this unit is already pre-installed in a flexiBox (FB-9), or a maxiBox, with either a local or a remote panel from the factory then refer to the "Hardware Installation Guide" which will be enclosed with the system. If this unit is pre-installed in a miniBox (MB-9), then also refer to the "Hardware Installation Guide" which will be enclosed with the system

If this unit has been ordered separately, we assume here that you already have a flexiBox system with a Flexipanel and that the flexiBox has at least one spare slot for the AS-2 card.

2.2 Installing the AS-2 into a flexiBox

To install the AS-2 into a flexiBox it is desirable (but not necessary) to power down the flexiBox. Follow these instructions.

On the rear of the flexiBox are 6 slots for Products. Remove any spare blanking plate. There are 2 off M2.5 Screws, which require unfastening for the blanking plate.

Slide the Product PCB into the spare slot and firmly push it "home".

Use the two thumbscrews to fasten the unit in place. Now refer to the "GeNETics User Guide". If your system consists of a single flexiBox with a single flexiPanel then refer to the section titled "flexiPanel Auto Set-up". If your system is part of a network with more than one flexiPanel then refer to the section titled "flexiPanel Manual Set-up". This will guide you through acquiring your product as a device on the flexiPanel.

2.3 Connecting to an AS-2

A Typical Connection diagram for the AS-2 is shown below. All signals are SDI:

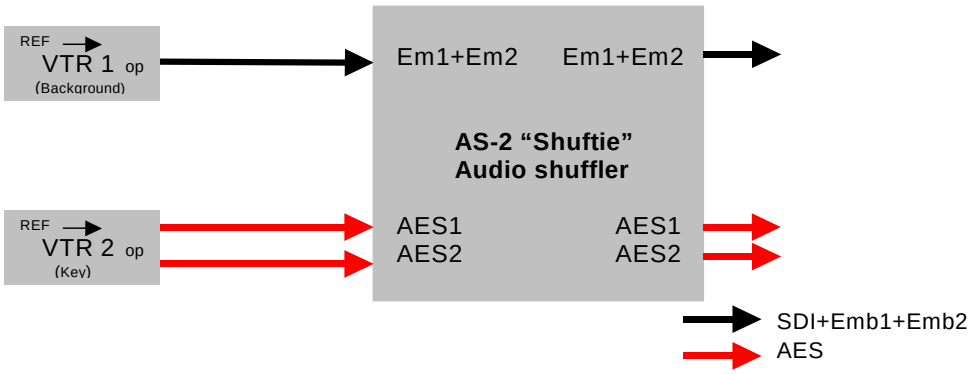

Figure 5 Typical connections for a AS-2 Module

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In the above diagram, the two VTR's provide an embedded source and two AES sources which can have their audio streams shuffled and/or mixed down on any or all of the audio output options.

Figure 6 AS-2 "shuftie" rear connections.

The rear connections show the SDI input and output BNC connections. The 15W D-type has the AES inputs and outputs. The GPI connections are not used.

Pin Number (15W D type)	Function
1	AES 1 Input+
2	AES 1 Input-
3	AES 2 Input+
4	AES 2 Input-
5	AES 1 Output A+
6	AES 1 Output A-
7	AES 2 Output A+
8	AES 2 Output A-
9	AES 1 Output B+
10	AES 1 Output B-
11	AES 2 Output B+
12	AES 2 Output B-
13	GPI1 Not used
14	GPI2 Not used
15	GND

Figure 7 Pinout of 15W D-type connector

GPI's are short to ground to activate.

2.4 Connecting Panels to the AS-2

The AS-2 may be operated using a FP-9 Flexipanel locally mounted. For detailed information on connecting remote panels refer to the section "Connection of Remote Panels to a flexiBox" in the geNETics Hardware Installation Guide.

Below is shown a typical system consisting of an AS-2 in a flexiBox controlled by a remote FP-9.

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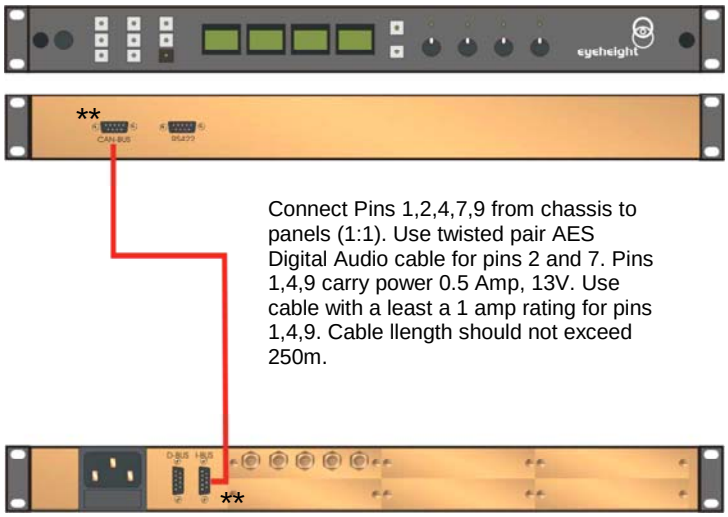
**
Connect Pins 1,2,4,7,9 from chassis to panels (1:1). Use twisted pair AES Digital Audio cable for pins 2 and 7. Pins 1,4,9 carry power 0.5 Amp, 13V. Use cable with a least a 1 amp rating for pins 1,4,9. Cable llength should not exceed 250m.
**

I-Bus pins 2 & 7

** The I-BUS Network requires terminating with 100 Ohms at each extreme end of the network. Ensure that this is done either by an external 100 ohm resistor OR ONE Panel/Product at each end has the termination set. See the "Genetics User Guide" Under the sections "Flexipanel Power/I-BUS Jumpers".For the 4RU Panels see “4RU Panel (FP-10) Jumpers for I-BUS” and “4RU Panel (VP-10, SW-10, AP-10) Jumpers for I-BUS” . Alternatively The termination can be set on a Product (ie the AS-2 module). Information about this is given in this manual.

N.B. From 1/10/02 Eyeheight introduced a change in the flexiBox Chassis. Most versions now have two 9 way connectors on the rear labelled “I-Bus” and “D-Bus”. The “I-Bus” connector is the same as the previously labelled “Can-B” connector. Although a maxiBox is shown in this diagram the same arrangement applies for a flexiBox chassis.

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3 Operation

3.1 Manual control of the AS-2

Manual Control of the AS-2 is done using one or more of the following control surfaces:

- The 1RU FP-9 Flexipanel.
- The FP10 Desk mounting Panel

The FP-9 and the FP-10 have identical manual control systems. (The FP-10 is simply a desktop version of the FP-9). The AS-2 is, as are all genetics modules, controlled using a set of MENUS. Each of these menus contains up to 3 parameters that are adjusted using the rotary digipots. The Menus define all of the adjustable operational parameters in the AS-2. Pressing the rotary digipots brings the parameter to its default value. Device selection is done using the device select switches which, when pressed, will offer the name of the device in the LCD Window. Modules can be acquired and then de-acquired using the set-up switch. For a full description of the operation philosophy of the geNETics system refer to the “geNETics User Guide” (section “Operation of the flexiPanel”)

A full list of the Menus and their functions are given in section 3 of this chapter.

3.2 Automation Control of the AS-2

Automation of the geNETics products is achieved via an RS422 port.** This port is marked RS422 on the rear of a flexiBox. For the port to work a flexiPanel MUST be connected locally on the front of the flexiBox.

Automation control of the AS-2 can be done using two protocol methods:

- geNETics Automation Protocol.
- PresTX Automation Protocol.

Genetics protocol is described in detail in the “GeNETics User Guide” section titled “Automation Protocol on the geNETics Platform”. The menu list in section 3 of this chapter contains the data information for the protocol.

PresTX Automation Protocol is used only for the PresTX Presentation Mixer and channel branding system. In this case an AU-2 Automation card is also required. Refer to the PresTX Product manual

**On most flexiBoxes later than 1/10/02 the RS422 port has been replaced by a “D-Bus” Port. The D-Bus port is for High Speed data transfer and is not used for serial control. In order to achieve serial control of any products on an I-Bus network Eyeheight Ltd have developed a RS232→I-bus converter “dongle”, (DG-9) which enables greater flexibility of products on the I-Bus network whilst using the same protocols as the RS422 port. Please refer to the “User guide for the DG-9 eyeheight dongle and set-up software.

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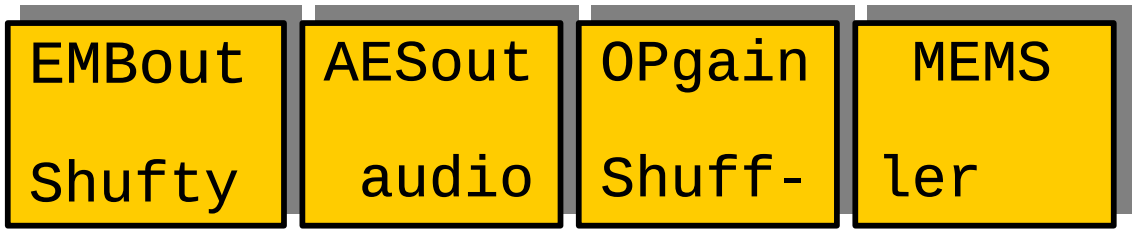
3.3 Operational Menus for the AS-2

Menus 00-03 Top Level Menus.



Menu Num.	Heading	Automation	Function
00	Set-up embedded output	none	Go To the embedded output set-up menus (04→07)
01	Set-up AES outputs	none	Go To the AES1/2 output set-up menus (08→11)
02	Output gains	none	Go to the output channel gain menus. (44→47)
03	Memories	none	Go To the memory menus (48→71)

Menus 04-07 Embedded output set-up.

(Press "PREV" to return to top menu)

Menu Num.	Heading	Automation	Function
04	Set-up embedded output 1,L	none	Go To the embedded 1 output Left channel set-up menus (12→15)
05	Set-up embedded output 1,R	none	Go To the embedded 1 output Right channel set-up menus (16→19)
06	Set-up embedded output 2, L	none	Go To the embedded 2 output Left channel set-up menus (20→23)
07	Set-up embedded output 2,R	none	Go To the embedded 2 output Right channel set-up menus (24→27)

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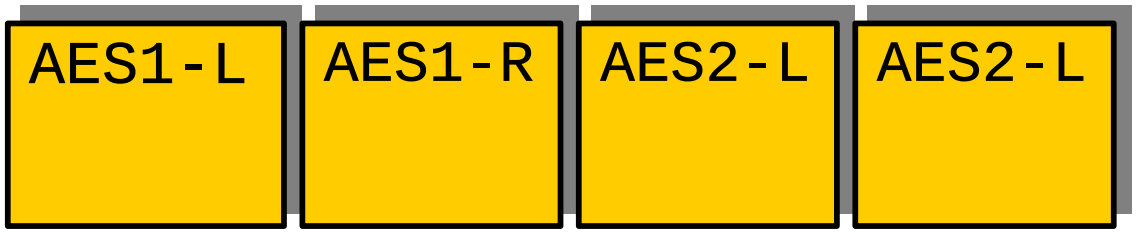
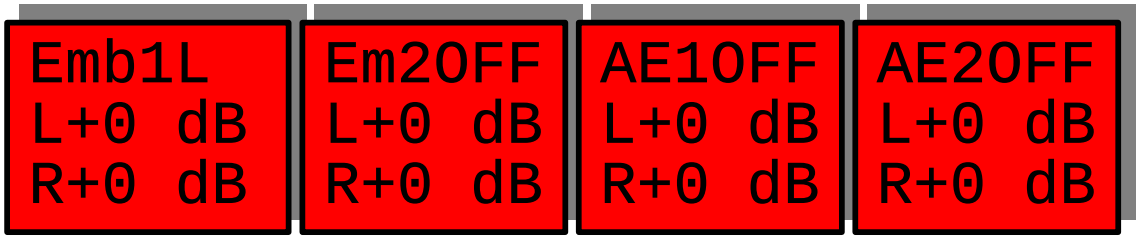
Menus 08-11 AES output set-up. (Press “PREV” to return to top menu)



Menu Num.	Heading	Automation	Function
08	Set-up AES output1,L	none	Go To the AES 1 output Left channel set-up menus (28→31)
09	Set-up AES output1,R	none	Go To the AES 1 output Right channel set-up menus (32→35)
10	Set-up AES output2,L	none	Go To the AES 2 output Left channel set-up menus (36→39)
11	Set-up AES output2,R	none	Go To the AES 2 output Right channel set-up menus (40→43)

Menus 12-15 Embedded 1 output, Left channel set-up.

(Press “PREV” to return to top menu)



Menu Num.	Heading	Automation	Function
12	Embedded 1 select	Level A 0=Em1OFF 1=Emb1L 2=Emb1R 3=E1 L+R	Pressing this button will cause the window to go green and the A,B and C digipots will become active. Adjustment of 3 parameters is then possible. **Digipot A** will select between: **Em1OFF**, this will cause there to be NO contribution on the embedded1(L) output from the embedded1(L) or the embedded1(R) inputs.

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		Level B =LdB, -120→+24 Level C =RdB, -120→+24	**Emb1L** This will cause the embedded1(L) output to have a contribution of “L” dB (set by digipot B) of embedded1(L). **Emb1R** This will cause the embedded1(L) output to have a contribution of “R” dB (set by digipot C) of embedded1(R). **E1 L+R** This will cause the embedded1(L) output to have a contribution of “L” dB (set by digipot B) of embedded1(L) AND a contribution of “R” dB (set by digipot C) of embedded1(R). **Digipot B** will adjust the level of the Left contribution, if selected. **Digipot C** will adjust the level of the Right contribution, if selected.
13	Embedded 2 select	Level A 0=Em1OFF 1=Emb1L 2=Emb1R 3=E1 L+R	Pressing this button will cause the window to go green and the A,B and C digipots will become active. Adjustment of 3 parameters is then possible. **Digipot A** will select between: **Em2OFF**, this will cause there to be NO contribution on the embedded1(L) output from the embedded2(L) or the embedded2(R) inputs. **Emb2L** This will cause the embedded1(L) output to have a contribution of “L” dB (set by digipot B) of embedded2(L). **Emb2R** This will cause the embedded1(L) output to have a contribution of “R” dB (set by digipot C) of embedded2(R). **E2 L+R** This will cause the embedded1(L) output to have a contribution of “L” dB (set by digipot B) of embedded2(L) AND a contribution of “R” dB (set by digipot C) of embedded2(R).

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		Level B =LdB, -120→+24 Level C =RdB, -120→+24	**Digipot B** will adjust the level of the Left contribution, if selected. **Digipot C** will adjust the level of the Right contribution, if selected.
14	AES1 select	Level A 0=Em1OFF 1=Emb1L 2=Emb1R 3=E1 L+R Level B =LdB, -120→+24 Level C =RdB, -120→+24	Pressing this button will cause the window to go green and the A,B and C digipots will become active. Adjustment of 3 parameters is then possible. **Digipot A** will select between: **AE1OFF**, this will cause there to be NO contribution on the embedded1(L) output from the AES1(L) or the AES1(R) inputs. **AES1L** This will cause the embedded1(L) output to have a contribution of “L” dB (set by digipot B) of AES1(L). **AES1R** This will cause the embedded1(L) output to have a contribution of “R” dB (set by digipot C) of AES 1(R). **A1 L+R** This will cause the embedded1(L) output to have a contribution of “L” dB (set by digipot B) of AES1(L) AND a contribution of “R” dB (set by digipot C) of AES1(R). **Digipot B** will adjust the level of the Left contribution, if selected. **Digipot C** will adjust the level of the Right contribution, if selected.
15	AES2 select	Level A 0=Em1OFF 1=Emb1L 2=Emb1R 3=E1 L+R	Pressing this button will cause the window to go green and the A,B and C digipots will become active. Adjustment of 3 parameters is then possible. **Digipot A** will select between: **AE2OFF**, this will cause there to be NO contribution on the embedded1(L) output from the

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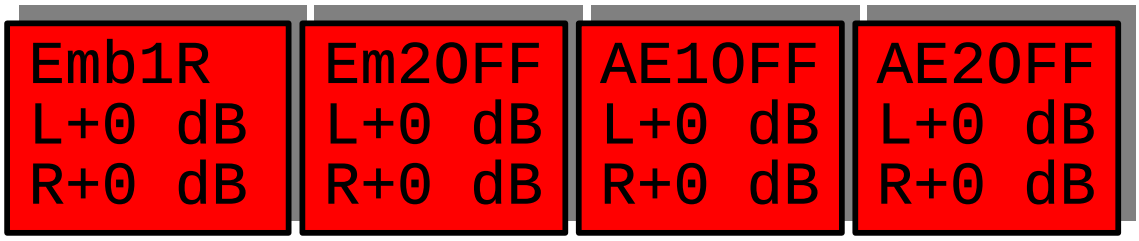
			AES2(L) or the AES2(R) inputs. **AES2L** This will cause the embedded1(L) output to have a contribution of “L” dB (set by digipot B) of AES2(L). **AES2R** This will cause the embedded1(L) output to have a contribution of “R” dB (set by digipot C) of AES2(R). **A2 L+R** This will cause the embedded1(L) output to have a contribution of “L” dB (set by digipot B) of AES2(L) AND a contribution of “R” dB (set by digipot C) of AES2(R).
		Level B =LdB, -120→+24 Level C =RdB, -120→+24	**Digipot B** will adjust the level of the Left contribution, if selected. **Digipot C** will adjust the level of the Right contribution, if selected.

Menus 16-19 Embedded 1 output, Right channel set-up.

(Press “PREV” to return to top menu)



Menu Num.	Heading	Automation	Function
16	Embedded 1 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the embedded**1**(**R**) output.
17	Embedded 2 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the embedded**1**(**R**) output.
18	AES1 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the embedded**1**(**R**) output.

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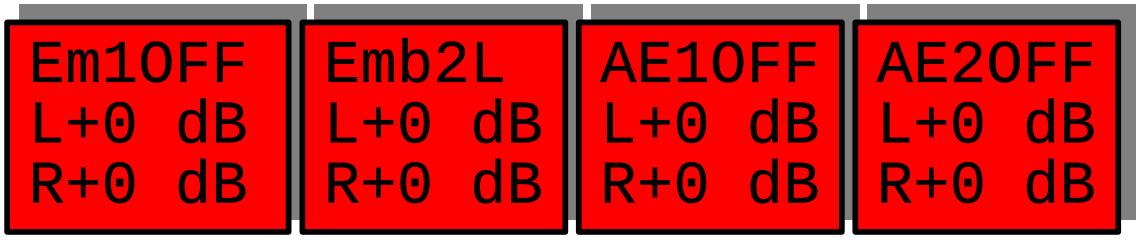
19	AES2 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the embedded**1**(**R**) output.

Menus 20-23 Embedded 2 output, Left channel set-up.

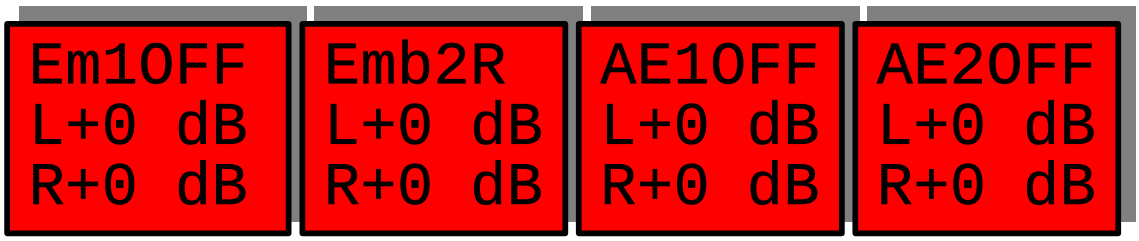
(Press "PREV" to return to top menu)



Menu Num.	Heading	Automation	Function
20	Embedded 1 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the embedded**2**(**L**) output.
21	Embedded 2 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the embedded**2**(**L**) output.
22	AES1 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the embedded**2**(**L**) output.
23	AES2 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the embedded**2**(**L**) output.

Menus 24-27 Embedded 2 output, Right channel set-up.

(Press "PREV" to return to top menu)



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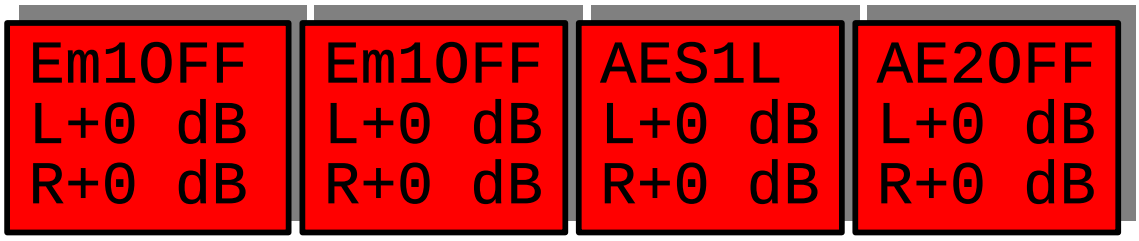
Menu Num.	Heading	Automation	Function
24	Embedded 1 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the embedded**2**(**R**) output.
25	Embedded 2 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the embedded**2**(**R**) output.
26	AES1 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the embedded**2**(**R**) output.
27	AES2 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the embedded**2**(**R**) output.

Menus 28-31 AES 1 output, Left channel set-up.

(Press "PREV" to return to top menu)



Menu Num.	Heading	Automation	Function
28	Embedded 1 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the AES**1**(**L**) output.
29	Embedded 2 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the AES**1**(**L**) output..
30	AES1 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the AES**1**(**L**) output.
31	AES2	Same as	See menus 12→15. The functions

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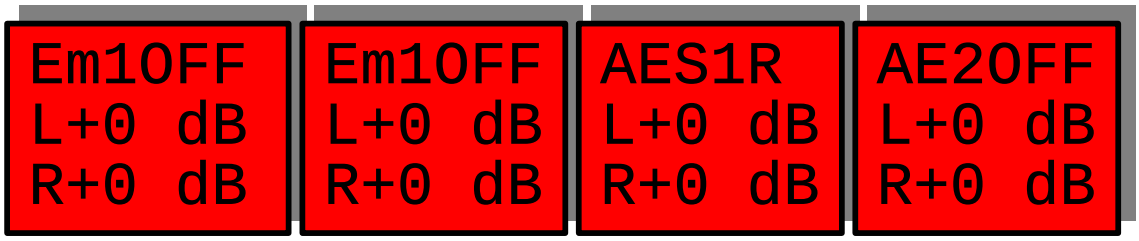
	select	menus 12→15	are the same except that this effects audio contributions to the AES**1**(**L**) output.

Menus 32-35 AES 1 output, Right channel set-up.

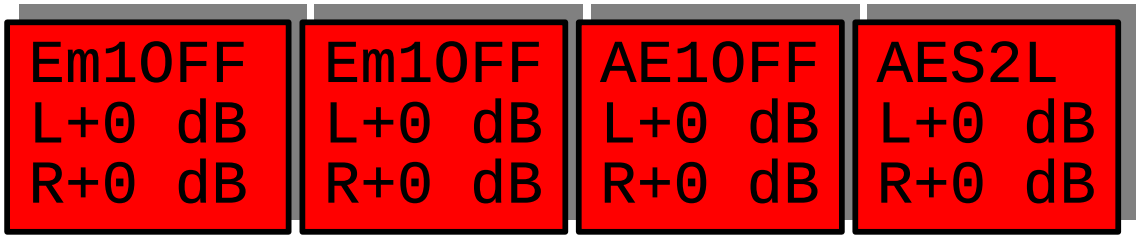
(Press "PREV" to return to top menu)



Menu Num.	Heading	Automation	Function
32	Embedded 1 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the AES**1**(**R**) output.
33	Embedded 2 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the AES**1**(**R**) output..
34	AES1 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the AES**1**(**R**) output.
35	AES2 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the AES**1**(**R**) output.

Menus 36-39 AES 2 output, Left channel set-up.

(Press "PREV" to return to top menu)



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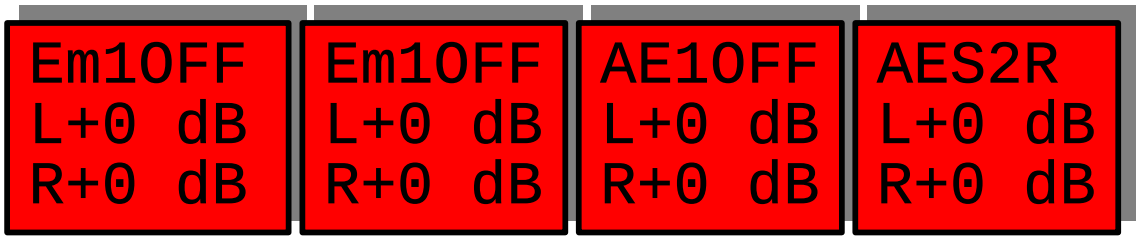
Menu Num.	Heading	Automation	Function
36	Embedded 1 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the AES**2**(**L**) output.
37	Embedded 2 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the AES**2**(**L**) output.
38	AES1 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the AES**2**(**L**) output.
39	AES2 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the AES**2**(**L**) output.

Menus 40-43 AES 2 output, Right channel set-up.

(Press "PREV" to return to top menu)



Menu Num.	Heading	Automation	Function
40	Embedded 1 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the AES**2**(**R**) output.
41	Embedded 2 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the AES**2**(**R**) output.
42	AES1 select	Same as menus 12→15	See menus 12→15. The functions are the same except that this effects audio contributions to the AES**2**(**R**) output.
43	AES2	Same as	See menus 12→15. The functions

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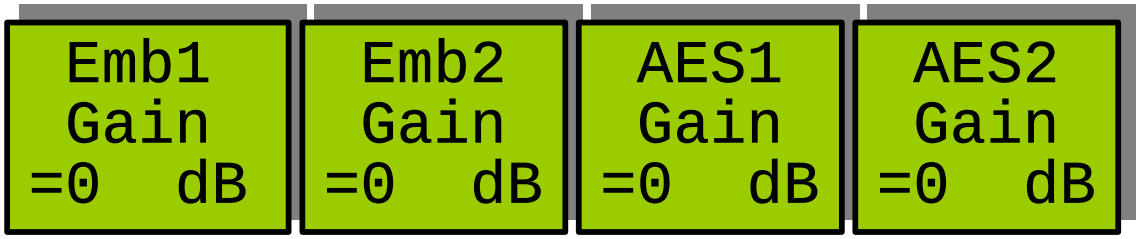
	select	menus 12→15	are the same except that this effects audio contributions to the AES**2**(**R**) output.

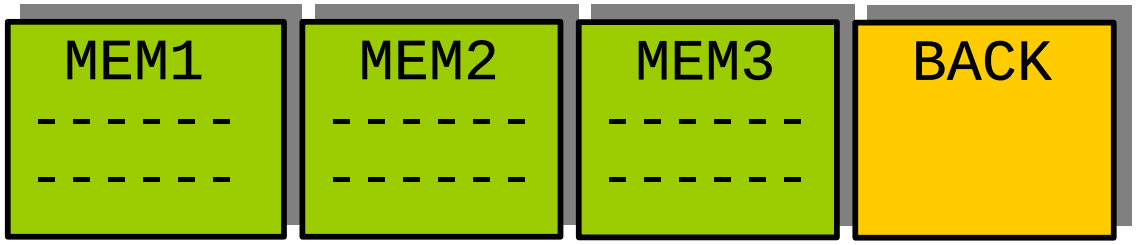
Menus 44-47 Output channel overall gains.

(Press "PREV" to return to top menu)



Menu Num.	Heading	Automation	Function
44	Embedded 1 gain	= x dB, -120→+24	Sets the Emb1 overall output gain of the resultant audio combination set in menus 12→19.
45	Embedded 2 gain	= x dB, -120→+24	Sets the Emb2 overall output gain of the resultant audio combination set in menus 20→27..
46	AES1 gain	= x dB, -120→+24	Sets the AES1 overall output gain of the resultant audio combination set in menus 28→35.
47	AES2 gain	= x dB, -120→+24	Sets the AES2 overall output gain of the resultant audio combination set in menus 36→43.

Menus 48-51 Memory 1→3 menus. (NEXT to navigate)



Menu Num.	Heading	Automation	Function
48	MEM1	1=Recall	Pressing this will recall Memory number 1.User Names can be programmed in to the memories using a keyboard. See "geNETics User guide", section "Giving product Memories names"

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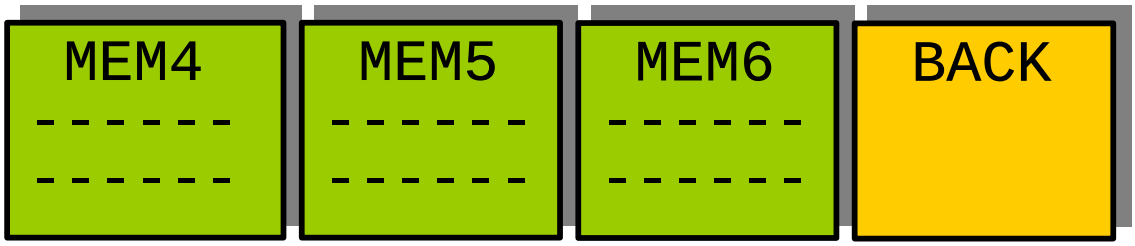
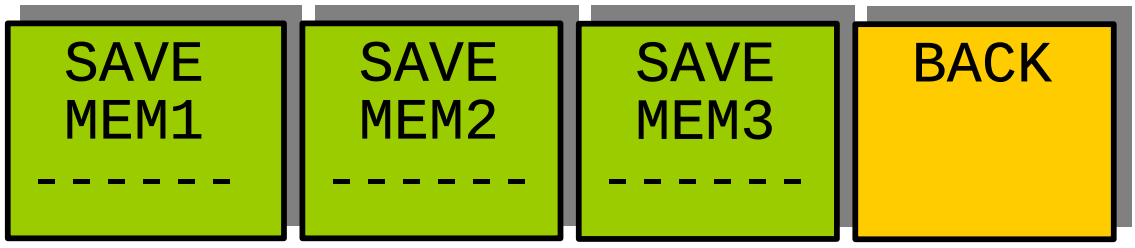
49	MEM2	1=Recall	Pressing this will recall Memory number 2.
50	MEM3	1=Recall	Pressing this will recall Memory number 3.
51	BACK	none	Go To the Top Level Menus

Menus 52-55 Memory 4→6 menus. (NEXT/PREV to navigate)



Menu Num.	Heading	Automation	Function
52	MEM4	1=Recall	Pressing this will recall Memory number 4.
53	MEM5	1=Recall	Pressing this will recall Memory number 5.
54	MEM6	1=Recall	Pressing this will recall Memory number 6.
55	BACK	none	Go To the Top Level Menus

Menus 56-59 Save memory 1→3 menus. (NEXT/PREV to navigate)



Menu Num.	Heading	Automation	Function
56	SAVE MEM1	1=Save	Pressing this will Save Memory number 1.
57	SAVE MEM2	1= Save	Pressing this will Save Memory number 2.
58	SAVE MEM3	1= Save	Pressing this will Save Memory number 3.
59	BACK	none	Go To the Top Level Menus

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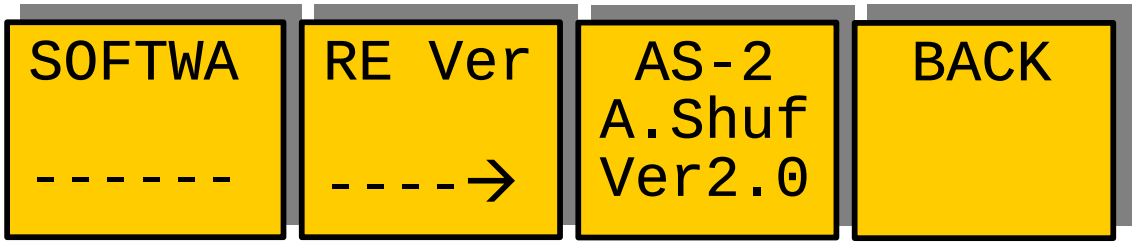
Menus 60-63 Save memory 4→6 menus. (NEXT/PREV to navigate)

Menu Num.	Heading	Automation	Function
60	SAVE MEM4	1= Save	Pressing this will Save Memory number 4.
61	SAVE MEM5	1= Save	Pressing this will Save Memory number 5.
62	SAVE MEM6	1= Save	Pressing this will Save Memory number 6.
63	BACK	none	Go To the Top Level Menus

Menus 64-67 Software version menu. (NEXT/PREV to navigate)



Menu Num.	Heading	Automation	Function
64	Info	none	Information
65	Info	none	Information
66	none	none	Software Version Information
67	BACK	none	Go To the Top Level Menus

Menus 68-71 Power on memory menus. (PREV to navigate)

Menu Num.	Heading	Automation	Function
68	Set As	1=Set	Pressing this will set the current

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	Pow On Memory		system set-up as the Power on memory default.
69	Recall Pow On Memory	1=Recall	Pressing this will recall The Power-on memory set up in the last menu.
70	Total Reset	1=Reset	Pressing this will cause a first Birthday of the unit. All current memories and settings will be lost.
71	BACK	none	Go To the Top Level Menus

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4 Technical Appendix

4.1 Technical Specification for the AS-2

Number of Inputs	3, 1 SDI and 2 48K AES inputs
SDI Line Length	At least 200 Meters of PSF1/3 (Typically 275 Meters)
Number of Outputs	5, 1 SDI and 4 AES outputs
Total Number Of Connections	3, 2 BNC for SDI in/out and 1 15W D-Type for the AES connections.
SDI Output Jitter	The system will add less than 0.2UI to the input Jitter. (This is only guaranteed on issue 2 or later cards)
Current Consumption	<800mA at +5V
Size	215mm by 100mm

4.2 Jumpering the I-BUS (CAN-BUS) Termination

The I-BUS Network is the "control system" under which all Products and Panels are networked together. Under certain circumstances it is necessary to terminate the network. This can be done on a Panel or a "Product". To terminate this product, locate J6 on the AS-2 Processor Card supplied which is between U1 (The large square "chip") and the Edge connector. (This is on the half of the card labelled "CHP-100 Spartan2 Processor"). Jumper this with a 2mm link.

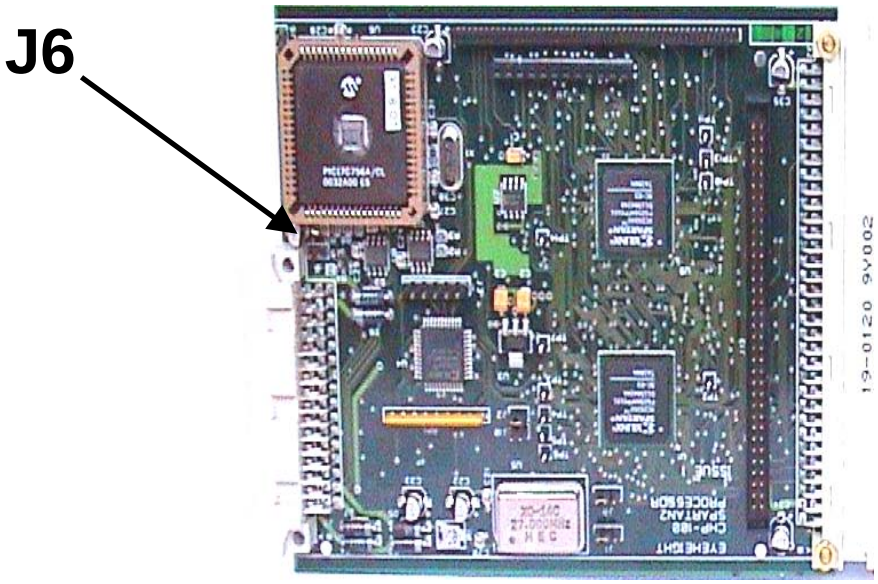

Figure 4-1 Location Of I-Bus Termination Link

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